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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,729	11/10/2003	William M. Hiatt	2269-5558C US (99-0253.02)	5028
24247	7590	11/29/2006	EXAMINER CARRILLO, BIBI SHARIDAN	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			ART UNIT 1746	PAPER NUMBER

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/705,729

Applicant(s)

HIATT ET AL.

Examiner

Sharidan Carrillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) 23-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-65 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/7/2005, 11/03/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a semiconductor device, does not reasonably provide enablement for any type of substrate. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims embrace an invention which contains any known substrate, which could/ can be selected from literally thousands (i.e. metal, plastic, ceramic, glass, tile, acrylic, wood). It does not appear to be feasible that any substrate would function in the present invention. Further, for one skilled in the art to reproduce the present invention (which must be possible, if the specification is adequate), there would clearly be undue experimentation to do so in an attempt to figure out which substrates work and which ones do not.

3. Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 is nonenabling because it is unclear from the instant specification what one considers as a programmable material consolidation fabricated feature. Paragraph 26 of the specification teaches fabricating features on a semiconductor device, however, it is unclear from the specification what is a programmable material consolidation fabricated feature.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it is unclear what the skilled artisan would consider as a "unconsolidated material". Paragraph 54 of the specification teaches unconsolidated material, such as polymer or the like. However, the specification does not describe what an unconsolidated material is. The limitations of "such as a polymer" or the like, only provides an example but does not describe what the unconsolidated material actually is and/or what the skilled artisan would consider an unconsolidated material to be. The examiner is interpreting the limitation to mean any loose material present on the substrate surface. Claim 1 is indefinite because it is unclear what one of ordinary skill in the art would consider as a "programmable material consolidation fabrication feature". Claim 1 is indefinite because there is no positive step of removing unconsolidated material from the substrate. The claim is only directed to applying

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pressure to the unconsolidated material. Claims 2-3 and 6-7 are indefinite because it is unclear what the skilled artisan would consider as "sufficient pressure".

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-8, and 11-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Madsen (6616768).

Re claims 1, and 11-14, Madsen teaches removal of unconsolidated material (i.e. dust) from the substrate 11 by directing pressurized water (13) towards the substrate surface. The limitations of a programmable material (consolidation fabrication feature are met in view of the indefiniteness. Re claims 2-4, Madsen teaches pressurized water which reads on positive pressure. Re claims 5-7, Madsen teaches that some of the heads of nozzle 14 are capable of sucking the material to be removed. Such suction, by definition implies the use of a negative pressure source suitable for removal of contaminants. Re claim 8, col. 3, lines 15-20 teach collecting the dust in combination with water. Re claim 15, the limitations are inherently met since Madsen teaches spraying the cleaning agent unto the substrate surface. Re claim 16, Madsen teaches a

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conveyor 11 which moves the individual boards including water present on the surface.

Re claims 17-20, Madsen teaches an air-knife (positive pressure) and suction (i.e. negative pressure) to remove the dust. Re claim 21, the limitations are met since a negative pressurized force (i.e. suction) is applied to remove the contaminants.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Taniyama et al. (6247479).

Taniyama teaches washing a semiconductor wafer by treating with cleaning agents to remove contaminants via nozzle 43. The limitations of directing pressure are inherently met since nozzles discharge fluids under pressurized conditions. The limitations of at least programmable material consideration fabricated feature are inherently met since Taniyama teaches the same semiconductor substrate as applicant's invention. Re claims 2-4, the limitations are met since Taniyama teaches applying fluid using a nozzle, therefore the limitations of a pressurized fluid are met. Re claims 5-7 and 18, col. 6, lines 45-50 teaches a vacuum pump having a suction port for exhausting liquid via exhaust pipes 21. Re claim 8, col. 6, lines 50-52 teaches recovery and regeneration of waste liquid. Re claims 9-10, col. 13, lines 1-18 teaches collecting the waste liquid, filtering out impurities and reusing the regenerated liquid. Re claim 9, the limitations are met since the unconsolidated material also includes chemical solution

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present on the wafer surface which is further filtered and recycled for reuse. The chemical solutions are removed from the wafer surface by rinsing with water. Re claim 11, refer to col. 9, lines 20-22. Re claims 12-14, refer to Fig. 12. Re claim 15, the limitations are met as a result of spraying with water or a chemical solution. Re claims 16, and 21-22, the limitations are met since Taniyama teaches rotation of the wafer while applying solution to the substrate surface. Re claim 17, col. 13, lines 1-20. Re claims 18-20, Taniyama teaches applying a suction (negative pressure) by vacuum pump to remove liquid and contaminants present on the wafer surface. Additionally, spraying with a chemical solution or water rinse through nozzle 43 reads on positive pressure.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sumnitsch teaches cleaning a semiconductor wafer. Nohora et al. teach cleaning of curing mold. White teaches ultrasonic consolidation.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on M-W 6:30-4:00pm, alternating Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sharidan Carrillo
Primary Examiner
Art Unit 1746

bsc



SHARIDAN CARRILLO
PRIMARY EXAMINER